

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Withdrawn): A method for displaying a three-dimensional stereo image comprising the steps of:

displaying a left-eye image defined by a plurality of left-eye strip pixels and a right-eye image defined by a plurality of right-eye strip pixels such that the left-eye pixels and the right-eye pixels are arranged alternately from the left to the right in a width direction;

guiding the left-eye image and the right-eye image separately to the left-eye and the right-eye, respectively, of an observer;

shifting the left-eye image and the right-eye image by one pixel in an oscillating manner; and

deflecting the left-eye image and the right-eye image synchronized with the one-pixel shifting operation.

Claim 2 (Withdrawn): A three-dimensional image display apparatus comprising:

an image display device configured to display a left-eye image defined by a plurality of left-eye strip pixels and a right-eye image defined by a plurality of right-eye strip pixels such that the left-eye pixels and the right-eye pixels are arranged alternately from the left to the right in a width direction;

an image separator positioned in front of the image display device and configured to guide the left-eye image and the right-eye image to the left-eye and the right-eye, respectively, of an observer separately;

an image shifter configured to shift the left-eye image and the right-eye image by one pixel in an oscillating manner; and

a light deflector configured to deflect the left-eye image and the right-eye image having passed through the image separator synchronized with the one-pixel shifting operation of the image shifter.

Claim 3 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the light deflector includes a deflecting device and a voltage source for applying a voltage to the deflecting device, the deflecting device comprising:

- a pair of transparent substrates facing each other;
- a chiral smectic C phase liquid crystal layer held between the transparent substrates;
- a vertical aligning film formed on an inner surface of at least one of the transparent substrates; and
- a plurality of electrodes configured to apply an electric field to the liquid crystal layer parallel to the transparent substrates.

Claim 4 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the light deflector includes a deflecting device and a voltage source for applying a voltage to the deflecting device, the deflecting device comprising:

- a pair of transparent substrates facing each other;
- a nematic liquid crystal layer held between the transparent substrates;
- an aligning film formed on an inner surface of at least one of the transparent substrates; and
- a pair of electrodes formed one on each of the transparent substrates, at least one of the electrodes being an interlaced comb electrode, and the voltage being applied across the electrodes such that the intensity of an electric field varies between adjacent comb teeth of the interlaced comb electrode.

Claim 5 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the light deflector includes a deflecting device and a voltage source for applying a voltage to the deflecting device, the deflecting device comprising:

a pair of transparent substrates facing each other, at least one of the substrates having an inner surface with a saw-tooth profile with a slope corresponding to a direction of optical deflection;

a liquid crystal layer held between the transparent substrates, the liquid crystal being in one of a nematic phase and a chiral smectic C phase;

an aligning film formed on the inner surfaces of the transparent substrates; and

a plurality of electrodes configured to apply the voltage to the liquid crystal layer.

Claim 6 (Withdrawn): The three-dimensional image display apparatus of claim 5, wherein a period of the saw-tooth profile corresponds to a period of the image separator.

Claim 7 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the light deflector includes a deflecting device and a voltage source for applying a voltage to the deflecting device, the deflecting device comprising:

a pair of transparent substrates facing each other;

a nematic liquid crystal layer held between the transparent substrates;

an aligning film formed on an inner surface of at least one of the transparent substrates; and

a plurality of electrodes formed at least one on each of the substrates to apply the voltage to the liquid crystal layer, the electrode formed on at least one of the substrates being comprised of a plurality of strip electrodes connected by a high-resistance resistive element.

Claim 8 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the image separator is a lenticular lens array comprising a plurality of lenticular lens elements arranged from the left to the right.

Claim 9 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein a frame of each of the left-eye image and the right-eye image is divided in two, and a half frame of the left-eye image and a half frame of the right-eye image are shifted by one pixel.

Claim 10 (Withdrawn): The three-dimensional image display apparatus of claim 2, wherein the image display device is a direct-view liquid crystal display panel.

Claim 11 (Currently Amended): A method for displaying a three-dimensional image comprising the steps of:

generating a plurality of input images, each of the input images corresponding to one of multiple viewpoints including a right-eye position and a left-eye position of a viewer;

allocating in a time dividing manner two or more of the input images to each of different image display regions of an image display device;

switching said two or more input images at a certain timing to display one of said two or more images in each of the image display regions such that at a first timing a first of the input images is presented at a respective image display region, and at a second timing a second of the input images is displayed at the same respective image display region;

separating light images output from the image display regions from one another using an image separator positioned on a viewpoint side of the image display device; and

~~deflecting~~ switching a deflection direction of deflected light in synchronization with the first and second timing of presenting the two or more input images to deflect a light path of each of the light images emitted from the image separator toward a different viewpoint respective of the multiple viewpoints synchronized with the switching timing such that the first image from the respective image display region is deflected to a first of the multiple viewpoints at the first timing and the second image from the same respective image display region is deflected to a second of the multiple viewpoints at the second timing.

Claim 12 (Currently Amended): A three-dimensional image display apparatus comprising:

an image generator configured to generate multiple input images, each of the input images corresponding to one of multiple viewpoints including a right-eye position and a left-eye position of a viewer;

an image display device positioned at a prescribed distance from the multiple viewpoints and having multiple different image display regions, two or more of the input images being allocated in a time dividing manner to each of the image display regions such that at a first timing a first of the input images is presented at a respective image display region, and at a second timing a second of the input images is displayed at the same respective image display region, the image display device being configured to switch said two or more input images at a certain timing to display one of said two or more input images in the associated image display region;

an image separator positioned on a viewpoint side of the image display device and configured to separate light images output from the image display device from one another; and

a light deflector configured switching a deflection direction of deflected light in synchronization with the first and second timing of presenting the two or more input images to deflect to deflect a light path of each of the light images emitted from the image separator so as to guide each of the light images to different respective of the multiple viewpoints such that a first image from the respective image display region is deflected to a first of the multiple viewpoints at a first timing and a second image from the same image display region is deflected to a second of the multiple viewpoints at a second timing.

Claim 13 (Previously Presented): The three-dimensional image display apparatus of claim 12, wherein each of said multiple image display regions has a width d , and the image separator is designed such that at least one of a shape, an index of refraction, and a transmissivity changes periodically at a pitch D_s defined by a product of L and d ($D_s=L*d$), in which L denotes a spatially dividing number representing a number of image display regions covered by a unit area of the image separator.

Claim 14 (Previously Presented): The three-dimensional image display apparatus of claim 12, wherein the number of directions of optical deflection caused by the light deflector is m , m being a number of input image data items allocated to each of the image display regions.

Claim 15 (Previously Presented): The three-dimensional image display apparatus of claim 12, wherein the number of input images is n , and n is a product of L and m ($n=L*m$), in which L denotes a spatially dividing number representing a number of image display regions covered by a unit area of the image separator, m being a number of input image data items allocated to each of the image display regions.

Claim 16 (Previously Presented): The three-dimensional image display apparatus of claim 12, wherein a deflection switching timing of the light deflector is synchronized with the switching of said two or more input images of the image display device.

Claim 17 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein a fast scan direction of the image display device is a vertical direction.

Claim 18 (Original): The three-dimensional image display apparatus of claim 12, wherein the image is rewritten collectively at all pixels of the image display device.

Claim 19 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein the light deflector comprises:

a pair of substrates, an inner surface of at least one of the substrates having a sloped portion corresponding to a direction of optical deflection;

a liquid crystal layer in one of a smectic C phase and a nematic phase held between the substrates; and

a pair of electrodes configured to apply a voltage to the liquid crystal layer.

Claim 20 (Withdrawn): The three-dimensional image display apparatus of claim 19, wherein the sloped portion is in a saw-tooth profile of the inner surface of the substrate.

Claim 21 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein the light deflector includes a reference deflecting device and one or more deflecting

devices added to the reference deflecting device, and an angle of deflection θ_j of the j-th deflecting device added to the reference deflecting device is expressed as

$$\theta_j = \theta_0 * (1/2)^j \quad (j=1, 2, \dots, k)$$

where θ_0 is an angle of deflection of the reference deflecting device, and k is the number of added deflecting devices.

Claim 22 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein the image display device is a direct-view liquid crystal display panel.

Claim 23 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein the image display device is a direct-view liquid crystal display panel having liquid crystal on silicon.

Claim 24 (Original): The three-dimensional image display apparatus of claim 12, wherein the image display device is a projection-type liquid crystal display device having an aperture controlling part in a light bulb in order to restrict the size of a projected pixel at or under a pixel pitch.

Claim 25 (Original): The three-dimensional image display apparatus of claim 24, wherein the aperture controlling part is a microlens provided for each pixel.

Claim 26 (Withdrawn): The three-dimensional image display apparatus of claim 12, wherein the image separator is a lenticular lens array.

Claim 27 (Withdrawn): The three-dimensional image display apparatus of claim 19, wherein each of the substrates of the deflecting device has an inner surface with a saw-tooth profile having the sloped portion corresponding to the direction of optical deflection, the sloped portions of the substrates being symmetric with respect to the liquid crystal layer, and an index of refraction of one of the substrates is equal to an index of refraction for an ordinary ray in the liquid crystal layer, while an index of refraction of the other substrate is equal to an index of refraction for an extraordinary ray in the liquid crystal layer.